



Configuring a Cisco 7960/7940 SIP Phone for use with Avaya SIP Solutions

June 12, 2006

IP Telephony

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Agenda

- Lab Topology Overview
- Relevant Cisco Product Documentation Links
- Converting/Upgrading a Cisco 7960/7940 SIP phone for use with Avaya SIP Solutions (post 5.3 firmware)
- Converting/Upgrading a Cisco 7960/7940 SIP phone for use with Avaya SIP Solutions (pre-5.3 firmware)
- Upgrade Notes
- Additional Miscellaneous Slides
- Avaya Solution and Interoperability Lab Application Note



*****NOTE*** ***NOTE*** ***NOTE*** ***NOTE*** ***NOTE*****

Please read through this complete presentation BEFORE attempting the conversion/upgrade process

*****NOTE*** ***NOTE*** ***NOTE*** ***NOTE*** ***NOTE*****

Foreword: This presentation is part of an overall series of PowerPoint and Camtasia Studio Flash Recordings

- This PowerPoint presentation is part of a series of PowerPoint presentations and Camtasia Studio Flash Recordings covering:
 - Episode 1 - Overview of Documentation/Call Flows
 - Episode 2 - SES 3.1 SP1 Installation/Configuration
 - Episode 3 - CM 3.1 SIP Specific Configuration
 - Episode 4 - 46xx SIP end-points and one-X Desktop Edition configuration
- As such, this PowerPoint does not cover information previously captured by the above presentations.
- This presentations core goal is to assist in the conversion and/or upgrade of a Cisco 7960/7940 SIP phone for use with Avaya SIP Solutions



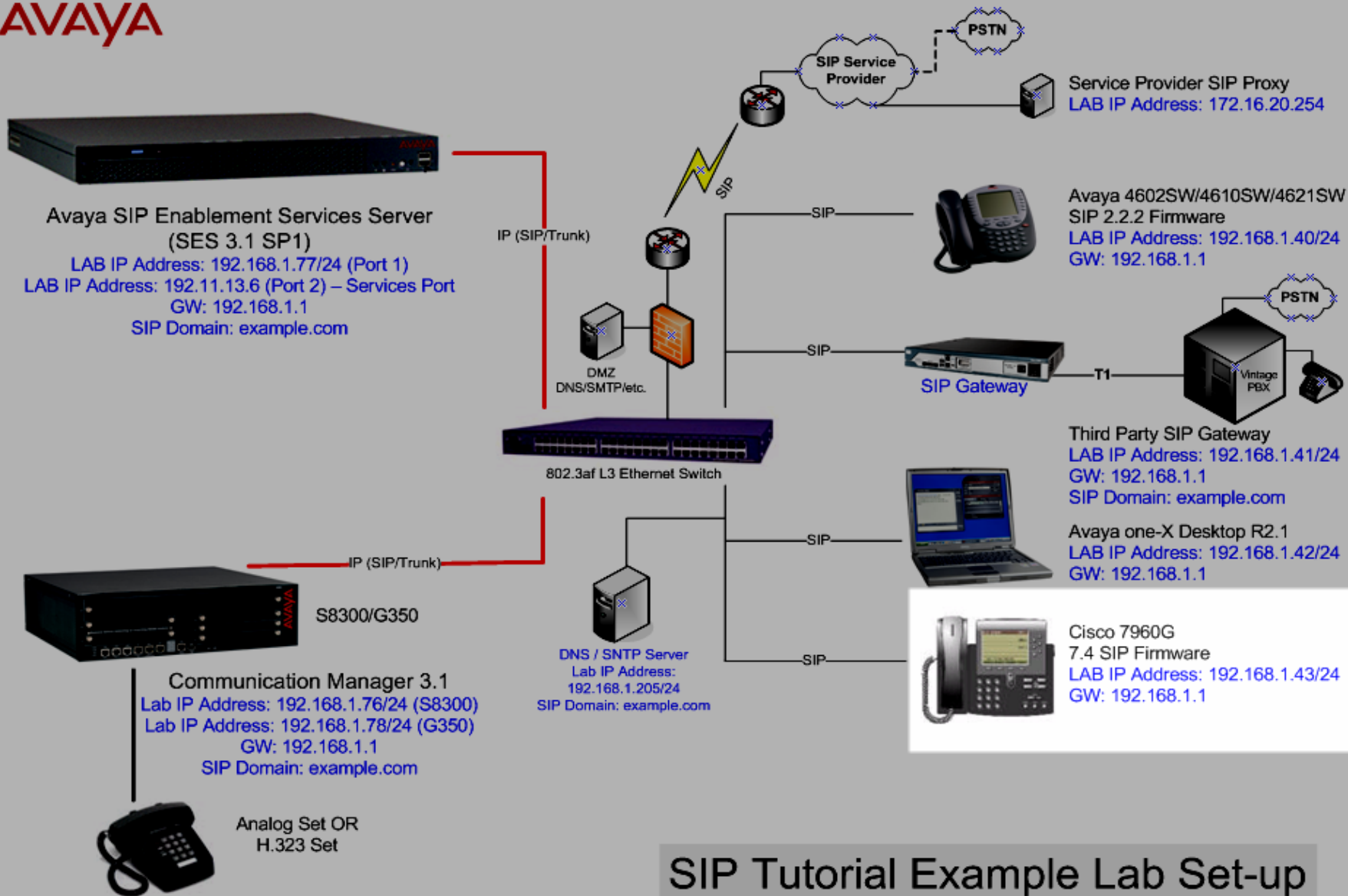
Lab Topology Overview

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SIP Tutorial Example Lab Set-up

Version 1.2, April 21, 2006



Relevant Cisco Product Documentation

[IP Telephony](#)

[Contact Centers](#)

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Relevant Cisco Product Documentation

- [Release Notes for Cisco SIP IP Phone 7940/7960 Release 7.4](#)
- [Cisco SIP IP Phone Administrator Guide, Versions 6.x and 7.x](#)
- [Converting a Cisco 7940/7960 CallManager Phone to a SIP Phone and the Reverse Process](#)
- [Using the Cisco IP Phone 7940/7960](#)
- [Cisco IP Phone 7960 and 7940 Firmware Upgrade Matrix](#)

** The above links are hyperlinked to the documentation*

Configuring a Cisco 7960/7940 SIP phone for user with Avaya SIP Solutions (*For Cisco 7960/7940's running 5.3 or later firmware)

**If this is not the case, SKIP to the next section, “*Upgrading from a pre-5.3 version of 7960/7940 firmware”*

For this lab, the 7960 was running existing SKINNY (SCCP) firmware Version 7.2 (4.0) – details below

- Model Number: CP-7960G
- MAC Address: 00-09-43-66-53-83
- AppLoad ID: P00307020400
- Boot Load: PC03A300
- Version: 7.2 (4.0)

First Digit	Second Digit	Third Digit	Fourth Digit
P represents a Phone.	0 means that it is a combined image (application and DSP).	Represents the phone Protocol: 0 for Skinny and s for SIP.	3 represents the ARM processor.

After the upgrade, the 7960 is running SIP 7.4 firmware – details below

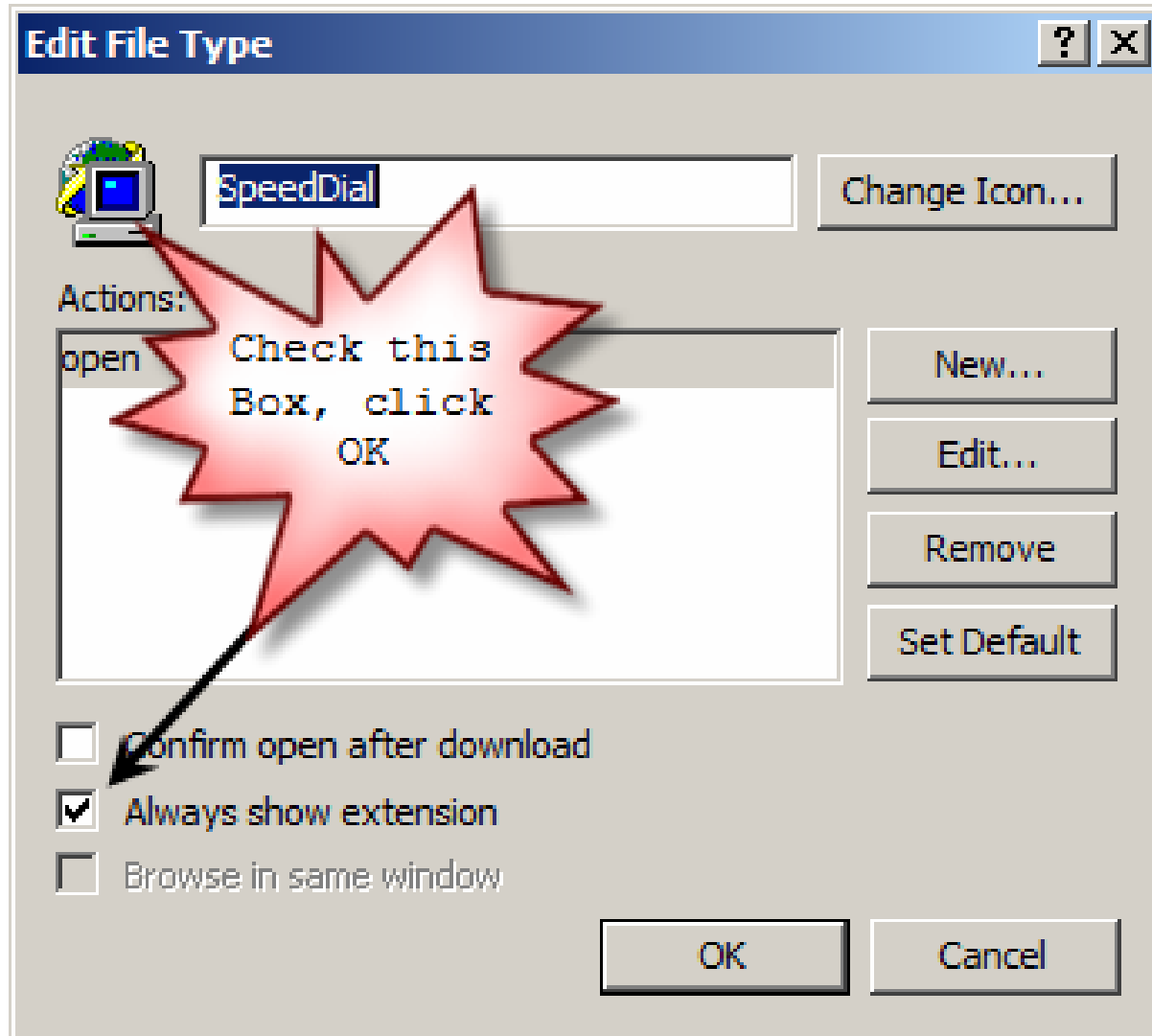
- Model Number: CP-7960G
- MAC Address: 00-09-43-66-53-83
- AppLoad ID: POS3-07-4-00
- Boot Load: PC03A300
- DSP Load ID: PS03AT45

First Digit	Second Digit	Third Digit	Fourth Digit
P represents a Phone.	0 means that it is a combined image (application and DSP).	Represents the phone Protocol: 0 for Skinny and s for SIP.	3 represents the ARM processor.

A Note about the .cnf filename extension in Windows

- The .cnf extension utilized by the Cisco SIP configuration files, SIPDefault.cnf and SIPMacAddress.cnf is an extension already associated with the Windows terminal program, Hyperterm.
- By Default, Hyperterm hides the .cnf extension
- If you would like the .cnf extension to be visible, follow these steps
 - Double Click the “My Computer” icon in Microsoft Windows
 - Under the menu bar of this dialog select: Tools, Folder Options..., File Types Tab
 - Click an item inside the Registered File Types list box and press the letter C (to jump down to “C”) and scroll down to the file type .cnf and select it
 - Click the “Advanced” Button
 - Check the checkbox, “Always show extension” shown in the following slide...

A Note about the .cnf filename extension in Windows - continued



Installation Step by Step...(5.3 or later firmware)

1. Download the 7.4 Firmware from the Cisco Web Site [Here](#)
 - POS3-07-4-00.zip
2. Download the SIPDefault.cnf and SIPMacAddress.cnf [Here](#)
 - SIPmacaddress.cnf -Generic Phone Specific SIPmacaddress.cnf File
 - SIPDefault.cnf - Generic SIPDefault.cnf Configuration File
3. Unzip the contents of POS3-07-4-00.zip into the /tftpboot directory of your TFTP server (contents below)
 - OS79XX.TXT
 - POS3-07-4-00.bin
 - POS3-07-4-00.loads
 - POS3-07-4-00.sb2
 - POS3-07-4-00.bin
 - POS3-07-4-00.sbn
4. Copy the SIPmacaddress.cnf and SIPDefault.cnf into the /tftpboot directory of your TFTP server

** Do not use any firmware version other than 7.4 as earlier and later firmware versions suffer from various interoperability issues*

Installation Step by Step...(5.3 or later firmware) cont..

5. Rename the SIPmacaddress.cnf file to SIP + the MAC address of your 7960 SIP phone (the lab 7960's MAC address is: 00-09-43-66-53-83). All alpha characters are UPPERCASE (the .cnf is lowercase)
 - SIP000943665383.cnf
6. Make the edits detailed in the following slides titled, “Key changes (from defaults) in: SIPDefault.cnf” – don't forget to make the below changes, unique to your environment
 - proxy1_address, sntp_server, outbound_proxy, logo_url, messages_uri
 - Verify: image_version is set to POS3-07-4-00
7. Make the edits in (SIP000943665383.cnf for this example) detailed in the following slides titled, “Key changes (from defaults) in: SIPmacaddress.cnf” – don't forget to make the below changes, unique to your environment
 - Line # Configuration (name, authname, password, display name)
8. Create the dialplan.xml file as detailed in the following slides titled, “Creation of dialplan.xml (stored in the tftp directory along with SIP phone firmware)” and copy it into the /tftpboot directory of your TFTP server
 - Customize the dialplan.xml for your unique environment

Installation Step by Step...(5.3 or later firmware) cont..

9. Create the ringlist.dat file as detailed in the following slide titled, “*Creation of ringlist.dat (stored in the /tftpboot directory)*” and copy it into the /tftpboot directory of your TFTP server. Note: The ringlist.dat file is optional.
 - You will also want to copy the referenced .pcm files into /tftpboot
10. Verify DHCP server is enabled and that DHCP option#66 is provisioned with the IP Address of the TFTP server hosting the above files.
11. Enable the TFTP Server application
12. Power-up the Cisco 7960 SIP phone and proceed with the upgrade process
13. The Cisco 7960 SIP phone should convert itself from SCCP to SIP and register with the extension and password provisioned in the SIP000943665383.cnf (SIPmacaddress.cnf) file.
14. Assuming that Avaya Communication Manager and the SIP Enablement Server have been properly configured, the Cisco 7960 should be able to make and receive phone calls at this point.
15. At the 7960 telephone, access the Call Preferences menu. Using the up/down button, move the highlighted selection to Speed Dial Lines, and press the Select soft key. The Speed Dial Configuration menu will be displayed. Move the highlighted selection to the desired speed dial button and press the Edit soft key to enter the CM provisioned Feature Name Extensions (FNE’s).

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Upgrade Screenshot 7960 SCCP -> 7960 SIP 7.4

- IP Address 192.168.1.70 is the Cisco 7960 SIP Phone
- Ringlist.dat was not utilized for this example

The screenshot displays a Windows XP desktop environment with three main windows open:

- TFTPServer2000 (192.168.1.205.69):** A window showing a log of file transfers. The log table is as follows:

Client	File	Status	Start	Finish	Result
192.168.1.70	C:\tftpfiles\CTLSEP00...		05 Jun, 15:26		File not found
192.168.1.70	C:\tftpfiles\SEPO0094...		05 Jun, 15:26		File not found
192.168.1.70	C:\tftpfiles\SIP000943...Done	Done	05 Jun, 15:26	05 Jun, 15:26	Finished : Sending
192.168.1.70	C:\tftpfiles\SIPDefault...Done	Done	05 Jun, 15:26	05 Jun, 15:26	Finished : Sending
192.168.1.70	C:\tftpfiles\P053-07-4...Done	Done	05 Jun, 15:26	05 Jun, 15:26	Finished : Sending
192.168.1.70	C:\tftpfiles\P003-07-4...Done	Done	05 Jun, 15:26	05 Jun, 15:26	Finished : Sending
192.168.1.70	C:\tftpfiles\CTLSEP00...		05 Jun, 15:27		File not found
192.168.1.70	C:\tftpfiles\SEPO0094...		05 Jun, 15:27		File not found
192.168.1.70	C:\tftpfiles\SIP000943...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\SIPDefault...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\P053-07-4...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\P053-07-4...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\SIPDefault...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\SIP000943...Done	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
192.168.1.70	C:\tftpfiles\RINGLIST...		05 Jun, 15:27		File not found
192.168.1.70	C:\tftpfiles\dialplan.xml	Done	05 Jun, 15:27	05 Jun, 15:27	Finished : Sending
- Command Prompt (C:\WINDOWS\system32\cmd.exe):** Shows the output of the 'dir' command in the C:\tftpfiles directory:


```
C:\tftpfiles>dir
Volume in drive C has no label.
Volume Serial Number is 10FB-1E72

Directory of C:\tftpfiles

06/05/2006 03:13 PM <DIR>          .
06/05/2006 03:13 PM <DIR>          ..
02/24/2005 10:51 PM             1,216 Copy of SIPmacaddress.cnf
06/05/2006 03:13 PM              172 dialplan.xml
03/10/2005 03:33 PM                15 OS79XX.TXT
03/10/2005 03:33 PM          129,472 P003-07-4-00.bin
03/10/2005 03:33 PM          129,876 P003-07-4-00.sbn
03/10/2005 03:44 PM          592,222 P053-07-4-00.bin
03/10/2005 04:01 PM           461 P053-07-4-00.loads
03/10/2005 03:45 PM          592,626 P053-07-4-00.sb2
06/05/2006 03:02 PM           1,219 SIP000943665383.cnf
06/05/2006 03:21 PM           6,227 SIPDefault.cnf
                10 File(s)      1,453,506 bytes
                 2 Dir(s)      1,796,743,168 bytes free

C:\tftpfiles>
```
- File Explorer (C:\tftpfiles):** Shows the directory contents with columns for Name, Size, Type, and Date Modified:

Name	Size	Type	Date Modified
P053-07-4-00.bin	579 KB	BIN File	3/10/2005 3:44 PM
P003-07-4-00.bin	127 KB	BIN File	3/10/2005 3:33 PM
P053-07-4-00.loads	1 KB	LOADS File	3/10/2005 4:01 PM
P053-07-4-00.sb2	579 KB	SB2 File	3/10/2005 3:45 PM
P003-07-4-00.sbn	127 KB	SBN File	3/10/2005 3:33 PM
Copy of SIPmacaddress	2 KB	SpeedDial	2/24/2005 10:51 P
SIP000943665383	2 KB	SpeedDial	6/5/2006 3:03 PM
SIPDefault	7 KB	SpeedDial	6/5/2006 3:21 PM
OS79XX.TXT	1 KB	Text Document	3/10/2005 3:33 PM
dialplan.xml	1 KB	XML Document	6/5/2006 3:13 PM



***Upgrading from a pre-5.3 version of 7960/7940 firmware**

** Assumption: Your Firmware Release is later then Release 2.3*

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Additional Configuration Notes (Upgrading from very old Cisco SIP releases)

- There are *incremental* firmware steps required when upgrading from older SIP/SCCP firmware releases (pre 5.3) to the currently supported 7.4 SIP firmware release. For example, SCCP firmware version 5.0(4.0) to SIP 7.4 in this case.
- For additional details, you may choose to reference the [“Cisco IP Phone 7960 and 7940 Firmware Upgrade Matrix”](#) noted earlier in this document.
- Note, if you have statically configured the IP parameters for your 7960/7940 sets (vs. using DHCP), these static values will be erased and have to be re-entered during the first part of the upgrade process from your current pre 5.3 firmware to 5.3. When Upgrading from SIP 5.3 to SIP 7.4, the static parameters are retained, however.

Additional Configuration Notes (Upgrading from very old Cisco firmware releases) - Incremental Upgrade Steps

1. Download the 5.3 and 7.4 Firmware from the Cisco Web Site [Here](#)
 - P0S3-05-3-00.zip
 - P0S3-07-4-00.zip
2. Download the SIPDefault.cnf and SIPMacAddress.cnf from the Cisco Web Site [Here](#)
 - SIPmacaddress.cnf -Generic Phone Specific SIPmacaddress.cnf File
 - SIPDefault.cnf - Generic SIPDefault.cnf Configuration File
3. Unzip the contents of P0S3-05-3-00.zip and P0S3-07-4-00.zip into the /tftpboot directory of your TFTP server (contents below)
 - P0S3-05-3-00.zip Contents
 - Bulletin_5.3.txt, P0S3-05-3-00.bin, P0S3-05-3-00.sbn, READ_BEFORE_INSTALLING.txt
 - P0S3-07-4-00.zip Contents
 - OS79XX.TXT, POS3-07-4-00.bin, POS3-07-4-00.loads, POS3-07-4-00.sb2, POS3-07-4-00.bin, POS3-07-4-00.sbn
4. Copy the SIPmacaddress.cnf and SIPDefault.cnf into your /tftpboot directory of your TFTP server
5. Edit the file, OS79XX.TXT (note all uppercase filename and extension) which is now located in your /tftpboot directory with a plain text editor (i.e. Wordpad) and replace the current line with the following single:
 - From this: image_version: P003-07-4-00
 - To this: image_version: P0S3-05-3-00

Additional Configuration Notes (Upgrading from very old Cisco firmware releases) - Incremental Upgrade Steps

5. Rename the SIPmacaddress.cnf file to SIP + MAC address of your 7960 SIP phone (the lab 7960's MAC address is: 00-09-43-66-53-83). All alpha characters are UPPERCASE (the .cnf is lowercase)
 - SIP000943665383.cnf
6. Make the edits detailed in the following slides titled, “Key changes (from defaults) in: SIPDefault.cnf” – don't forget to make the below changes, unique to your environment
 - proxy1_address, sntp_server, outbound_proxy, logo_url, messages_uri
 - Verify: image_version is set to POS3-05-3-00
7. Make the edits in (SIP000943665383.cnf for this example) detailed in the following slides titled, “Key changes (from defaults) in: SIPmacaddress.cnf” – don't forget to make the below changes, unique to your environment
 - Line # Configuration (name, authname, password, display name)
8. Create the dialplan.xml file as detailed in the following slides titled, “*Creation of dialplan.xml (stored in the /tftpboot directory along with the SIP phone firmware)*” and copy it into the /tftpboot directory of your TFTP server
 - Customize the dialplan.xml for your unique environment

Additional Configuration Notes (Upgrading from very old Cisco firmware releases) - Incremental Upgrade Steps

9. Create the ringlist.dat file as detailed in the following slide titled, “*Creation of ringlist.dat (stored in the /tftpboot directory)*” and copy it into the /tftpboot directory of your TFTP server. Note: The ringlist.dat file is optional.
 - You will also want to copy the referenced .pcm files into /tftpboot
10. Verify DHCP server is enabled and that DHCP option#66 is provisioned with the IP Address of the TFTP server hosting the above files.
11. Enable the TFTP Server application
12. Power-up the Cisco 7960 SIP phone and proceed with the upgrade process
13. If your were using static IP addressing, re-enter the IP parameters into the phone one the upgrade process is complete since the upgrade to SIP 5.3 will clear them. Note: The default password to “Unlock Config” is cisco. You must first disable DHCP to be able to re-enter/save the static IP parameters. Power cycle the phone.
14. The Cisco 7960 SIP phone should register with the extension and password provisioned in the SIP000943665383.cnf (SIPmacaddress.cnf) file.
15. Edit the OS79XX.TXT and replace the current line (P0S3-05-3-00) with this line
 - P003-07-4-00

Additional Configuration Notes (Upgrading from very old Cisco firmware releases) - Incremental Upgrade Steps

16. Edit the SIPdefault.cnf file and make sure the following line item is changed back:
 - From this: image_version: P0S3-05-3-00
 - To this: image_version: P0S3-07-4-00
17. Power cycle the phone
18. The Cisco 7960 SIP phone should convert itself from SIP 5.3 to SIP 7.4 and register with the extension and password provisioned in the SIP000943665383.cnf (SIPmacaddress.cnf) file
19. Assuming that Avaya Communication Manager and the SIP Enablement Server have been properly configured, the Cisco 7960 should be able to make and receive phone calls at this point.
20. At the 7960 telephone, access the Call Preferences menu. Using the up/down button, move the highlighted selection to Speed Dial Lines, and press the Select soft key. The Speed Dial Configuration menu will be displayed. Move the highlighted selection to the desired speed dial button and press the Edit soft key to enter the CM provisioned Feature Name Extensions (FNE's).

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SIPDefault.cnf and SIPMacAddress.cnf Edits

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Key changes (from defaults) in: SIPDefault.cnf

- # Image Version
 - image_version: POS3-07-4-00
- # Proxy Server
 - proxy1_address: "example.com" ; Can be dotted IP or FQDN
- # Proxy Server Port (default - 5060)
 - proxy1_port: 5060
- # Proxy Registration (0-disable (default), 1-enable)
 - proxy_register: 1 ; Set to 1 so phone registers to proxy
- # Out of band DTMF Settings (none-disable, avt-avt enable (default), avt_always - always avt)
 - dtmf_outofband: none
- # Dialplan template (.xml format file TFTP root directory)
 - dial_template: dialplan ; Avoids having to press "DIAL" after number
- # Time Server (There are multiple values and configurations...)
 - sntp_server: "192.168.1.205" ; Set to lab NTP Server
 - sntp_mode: unicast ; unicast, multicast, anycast, or directedbroadcast (default)

Key changes (from defaults) in: SIPDefault.cnf (continued)

- # Do Not Disturb Control (0-off, 1-on, 2-off with no user control, 3-on with no user control)
 - dnd_control: 0
- # Outbound Proxy Support
 - outbound_proxy: "192.168.1.77" ; restricted to dotted IP or DNS A record only
 - outbound_proxy_port: 5060; default is 5060
- # Allow for the bridge on a 3way call to join remaining parties upon hangup
 - cnf_join_enable : 0 ; 0-Disabled, 1-Enabled (default)
- # Telnet Level (enable or disable the ability to telnet into the phone)
 - telnet_level: 0 ; 0-Disabled (default), 1-Enabled, 2-Privileged
- # XML URLs
 - logo_url: "http://x.x.x.x/AvayaPhoneLogo.bmp"; URL for branding logo to be used on phone display (Note: Lab has no HTTP server to host this content)
- # URI for Messages Button
 - messages_uri: "xxxxx" ; Set to voice mail hunt group (Note: Lab has no voice mail hunt group set-up)
- # Enable (1) or Disable (0) Call Forward soft key
 - local_cfwd_enable: 0

Key changes (from defaults) in: SIPmacaddress.cnf

- # SIP Configuration Generic File
- # Line 1 appearance
 - line1_name: 55001
- # Line 1 Registration Authentication
 - line1_authname: "55001"
- # Line 1 Registration Password
 - line1_password: "123456"
- # Line 2 appearance
 - line2_name: 55001
- # Line 2 Registration Authentication
 - line2_authname: "55001"
- # Line 2 Registration Password
 - line2_password: "123456"
- # Phone Label (Text desired to be displayed in upper right corner)
 - phone_label: "Avaya SES" ; Has no effect on SIP messaging

Key changes (from defaults) in: SIPmacaddress.cnf (continued)

- # Line 1 Display Name (Display name to use for SIP messaging)
 - line1_displayname: "Jim Cantwell"
- # Line 2 Display Name (Display name to use for SIP messaging)
 - line2_displayname: "Jim Cantwell"
- # Phone Prompt (The prompt that will be displayed on console and telnet)
 - phone_prompt: "Cisco SIP Phone" ; Limited to 15 characters
(Default - SIP Phone)
- # Phone Password (Password to be used for console or telnet login)
 - phone_password: "cisco" ; Limited to 31 characters (Default - cisco)
- # User classification used when Registering [none(default), phone, ip]
 - user_info: none

Creation of dialplan.xml (stored in the /tftpboot directory along with the SIP phone firmware)

```
<DIALTEMPLATE>
  <TEMPLATE MATCH="5...." Timeout="0" User="Phone" Rewrite="%s"/>
  <TEMPLATE MATCH="9,1....." Timeout="0" Tone="Bellcore-Inside" User="Phone" Rewrite="%s"/>
  <TEMPLATE MATCH="#.." Timeout="0" User="Phone" Rewrite="%s"/>
  <TEMPLATE MATCH="\*.." Timeout="0" User="Phone" Rewrite="%s"/>
</DIALTEMPLATE>
```

- The periods in the match string stand for any digit. The examples above will automatically send the SIP INVITE after dialing a 5 plus 4 digits or a 91 plus 10 digits.
- The #.. and *.. symbol above are the FAC codes defined on the dial plan analysis form of CM.
- Comments can be entered into this file in the format <!-- Comment -->
- The # is processed as a "dial now" event by default. You can override this (which we did above) by specifying # in the dial-plan template, in which case the phone does not dial immediately when the # is pressed but does continue to match the dial-plan template that specifies the #. The # is not matched by the wildcard character * or the period (..).
- The * is processed as a wildcard character. You can override this (which we did above) by preceding the * with the backward slash (\) escape sequence, resulting in the sequence *. The phone automatically strips the \ so that it does not appear in the outgoing dial string. When * is received as a dialed digit, it is matched by the wildcard characters * and period (..).

Creation of dialplan.xml (store in the /tftpboot directory along with SIP phone firmware) continued...

- A secondary dial tone is invoked by the comma character (tone names below)- see example of use on previous slide, i.e. tone=Bellcore-Inside (default is BellCore-Outside)
- [How to Create Dial Plans](#) (on the Cisco 7960/7940)

• Bellcore-Alerting	• Bellcore-dr5	• Bellcore-Reorder
• Bellcore-Busy	• Bellcore-dr6	• Bellcore-Stutter
• Bellcore-BusyVerify	• Bellcore-Hold	• CallWaiting-2
• Bellcore-CallWaiting	• Bellcore-Inside	• CallWaiting-3
• Bellcore-Confirmation	• Bellcore-None	• CallWaiting-4
• Bellcore-dr1	• Bellcore-Outside (default)	• Cisco-BeepBonk
• Bellcore-dr2	• Bellcore-Permanent	• Cisco-Zip
• Bellcore-dr3	• Bellcore-Reminder	• Cisco-ZipZip
• Bellcore-dr4		

For more information on the Bellcore tones, see Bellcore GR-506-CORE

Creation of ringlist.dat (stored in the /tftpboot directory)

- This file contains a list of the files with the ring tones and a label displayed to the user on the phone. From the phone select Settings : Ring Type. This file is optional.
- Format:
 - Ring Tone Name <tab> filename
 - AT&T 1 ring_att1.pcm (tab is between AT&T 1 and ring_att1.pcm)
 - AT&T 2 ring_att2.pcm (tab is between AT&T 2 and ring_att1.pcm)
 - AT&T 3 ring_att3.pcm (tab is between AT&T 3 and ring_att1.pcm)
 - AT&T 4 ring_att4.pcm (tab is between AT&T 4 and ring_att1.pcm)
- Ring Tone files (.pcm) are hosted on the TFTP server
- [Customizing the Cisco SIP IP Phone Ring Types](#)



Upgrade Notes

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- Verify that the phone icon located next to each defined line appearance does not have an “X” next to it, indicating that registration has occurred. If the “X” appears, check that the proxy server address is set to the correct domain name, the outbound proxy IP address and port number are correct, and that the Proxy Register parameter is set to 1 (Enable). Verify that the line appearance shows the SES provisioned extension for that phone.



Additional Notes

- The Cisco IP 7960G phone supports 1 to 6 line appearances, the Cisco IP 7940G phone supports 1 to 2. This lab uses 2 line appearances for the 7960G. The number of line appearances takes away from the speed dial appearances.
- This lab uses the Jim Cantwell account provisioned on the Avaya SES, 55001, for the Cisco 7960G login identity.
- The background space allocated for the background image is 90 x 56 pixels. Images that are larger than this will automatically be scaled down to 90 x 56 pixels. This parameter supports Windows 256 color bitmap format only. White is clear on the telephones display.
- The contents of the SIPMacAddress.cnf file override the contents of the SIPDefault.cnf file. So, for example, you could place the logo_url: parameter located in the SIPDefault.cnf file into the SIPMacAddress.cnf to place a unique background graphic for a specific phone.

Additional Notes

- The Cisco 7960G/7940G supports only SIP/UDP
- The MAC address for the 7960/7940 sets are located on a sticker underneath the phone
- The Cisco 7960G/7940G supports TFTP for centralized configuration. All firmware files and configuration files should be placed in the TFTP root directory (tftp_cfg_dir defaults to this root directory). DHCP Option#66 is used by the phone to locate the TFTP server.

Additional Notes – Required DHCP Options

- The Cisco SIP phones can use DHCP to obtain their IP addresses. Scope Configuration options are as follows:
 - dhcp option #1 (IP subnet mask)
 - dhcp option #3 (default IP gateway)
 - dhcp option #6 (DNS server IP address)
 - dhcp option #15 (domain name) – i.e. example.com
 - dhcp option #50 (IP address)
 - dhcp option #66 (TFTP server IP address)



Additional Miscellaneous Slides

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CM “change locations” form and certain SIP x-fer scenarios

change locations send (return) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) pre

1 2 3 4 5 6 7 8 9

ARS Prefix 1157

Loc. No.	Name	Timezone	Offset	Pre-fix	Proxy Sel. Rte. Pat.
1:	<input type="text" value="Madrid"/>	<input type="text" value="+"/>	<input type="text" value="00:00"/>	<input type="text" value="520"/>	<input type="text" value="11"/>
2:	<input type="text" value="India-LSP"/>	<input type="text" value="+"/>	<input type="text" value="04:30"/>	<input type="text" value="523"/>	<input type="text"/>
3:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="529"/>	<input type="text"/>
4:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
13:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="23"/>	<input type="text"/>
14:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

For certain SIP transfer scenarios to work, the Proxy Selection Route Pattern field in the Locations form on CM must contain the route pattern that selects the SIP trunk

This Proxy Rte. pattern is used whenever CM needs to route a URI for which it is not authoritative.

CM is authoritative for a URI if the host part of the URI matches one of the following.

1. Home domain on the network-region that originated the call
2. Any c-lan ip-address.

This route pattern basically is there to point to one or more "outbound" proxies.

From the “Cisco IP Phone 7960 and 7940 Firmware Upgrade Matrix” Documentation

- The universal application loader allows the system administrator to use SCCP, SIP, and MGCP, on the same network. To do this, a hunt algorithm is employed that searches for multiple configuration files. Depending on which configuration file is found first, the phone will automatically select that protocol. The hunt algorithm ensures that the administrator can assign a specific protocol to a specific phone. The hunt algorithm searches for files in the following order:
 - 1. CTLSEP MAC File—For example, CTLSEP003094C25D2E.tlv. See the "Secure and Nonsecure Configuration" section.
 - 2. SEP MAC File—For example, SEP003094C25D2E.cnf.xml.
 - 3. SIP MAC File—For example, SIP003094C25D2E.cnf.
 - 4. MGCP MAC File—For example, MGC003094C25D2E.cnf.
 - 5. XML Default File—For example, XMLDefault.cnf.xml.
 - 6. SIP Default File—For example, SIPDefault.cnf.
 - 7. MGCP Default File—For example, MGCDefault.cnf.
- From the [Cisco SIP IP Phone Administrator Guide, Versions 6.x and 7.x](#) (PDF Page 37):

**Note**

The use of dual boot file OS79XX.TXT is deprecated in favor of individual XML configuration files for the phone using their SEP<macaddress>.cnf.xml style names. This allows Cisco CallManager and SIP-based configurations to share a common TFTP server, as the XML configuration is phone-specific and allows individual phones to be switched between SIP, SCCP, or MGCP images.

Useful Avaya SES SIP Debugging Tips

- From SES 3.1 ***SP1** from bash shell prompt - tethereal
 - tethereal -i eth0 -R sip
 - tethereal -i eth0 -R sip -V (verbose)
 - tethereal -i eth0 -R tcp.port==5061 (you wont be able to read the encrypted SIP packets but you can see if packets are flowing between SES and CM CLAN/S8300 PROCR)
 - tethereal -i eth0 -R ip.addr==x.x.x.x (x.x.x.x = a from/to IP address)

4xx, 5xx SIP messages may expand upon error condition (use Tethereal -V verbose option)

*SES 3.1 SP1 provides access to tethereal for admin account



Avaya Solution and Interoperability Lab Application Note

IP Telephony

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Configuring SIP IP Telephony Using Avaya SIP Enablement Services, Avaya Communication Manager, and Cisco 7940/7960 SIP Telephones - Issue 1.1 (Double Click embedded PDF Below)



Avaya Solution & Interoperability Test Lab

Configuring SIP IP Telephony Using Avaya SIP Enablement Services, Avaya Communication Manager, and Cisco 7940/7960 SIP Telephones - Issue 1.1

Abstract

These Application Notes describe the configuration steps required to connect Cisco 7940/7960 SIP telephones to a SIP infrastructure consisting of an Avaya SIP Enablement Services (SES) server and an Avaya S8300 Media Server with G700 Media Gateway running Avaya Communication Manager. Also described is how Avaya Outboard Proxy SIP (OPS) station features can be made available in addition to the standard features supported in the telephone. The configuration steps described are also applicable to other Linux-based Avaya Media Servers and Media Gateways running Avaya Communication Manager.

This issue of these Application Notes adds Message Waiting Indicator (MWI) support to the features documented in Issue 1.0.

**** [Click Here](#) to check for the latest Avaya Application Notes**



Thank You!

IP Telephony

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